C H A P T E R **4**

PIX 515/515E

This chapter describes how to install the PIX 515/515E, and includes the following sections:

- PIX 515/515E Product Overview
- Installing a PIX 515/515E
- PIX 515/515E Feature Licenses
- Installing Failover
- Removing and Replacing a PIX 515/515E Chassis Cover
- Replacing a Lithium Battery
- Installing a Memory Upgrade
- Installing a Circuit Board in a PIX 515/515E
- Installing a PIX 515/515E DC Model

The PIX 515 and the PIX 515E are the same except the PIX 515E has a faster processor.

PIX 515/515E Product Overview

This section describes the PIX 515/515E front and rear panels and the panel LEDs.

Figure 4-1 shows the front view of the PIX 515/515E.

Figure 4-1   PIX 515/515E Front Panel

Figure 4-2 shows the rear view of the PIX 515/515E.

Figure 4-2   PIX 515/515E Rear Panel

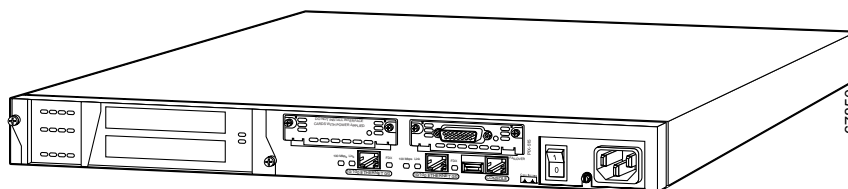Figure 4-3 shows the PIX 515/515E front panel LEDs.
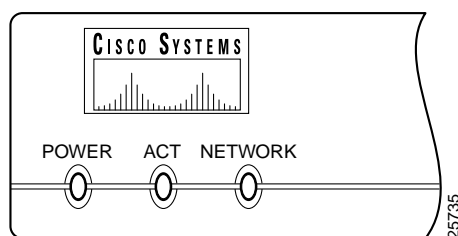
Figure 4-3   PIX 515/515E Front Panel LEDs

Table 4-1 lists the state of the PIX 515/515E front panel LEDs.

Table 4-1   PIX 515/515E Front Panel LEDs

LED	State	Description
POWER	On	On when the unit has power.
ACT	On	On when the unit is the active failover unit. If failover is present, the light is on when the unit is the active unit.
	Off	Off when the unit is in standby mode. If failover is not enabled, this light is off.
NETWORK	On	On when at least one network interface is passing traffic.

Figure 4-4 shows the PIX 515/515E rear panel LEDs.
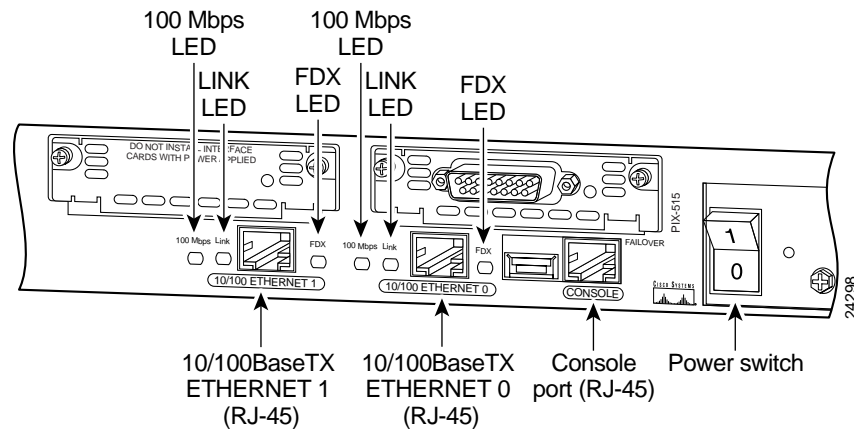
Figure 4-4   PIX 515/515E Rear Panel

Table 4-2 lists the state of the PIX 515/515E rear panel LEDs.

Table 4-2   PIX 515/515E Rear Panel LEDs

LED	Status	Description
100 Mbps	Light On	100 megabits per second 100BaseTX communication. If the light is off, that port is using 10 megabits per second data exchange.
LINK	Light On	Shows that data is passing on the network to which the connector is attached.
FDX	Light On	Shows that the connection uses full duplex data exchange where data is transmitted and received simultaneously.
	Light Off	If this light is off, half-duplex is in effect.

The inside or outside network connections can be made to any available interface port on the PIX 515/515E. If you are only using the ETHERNET 0 and ETHERNET 1 ports, connect the inside network cable to the interface connector marked ETHERNET 0 *or* ETHERNET 1. Connect the outside network cable to the remaining Ethernet port.

The USB port to the left of the Console port is not used. The detachable plate above the ETHERNET 1 connector is also not used.
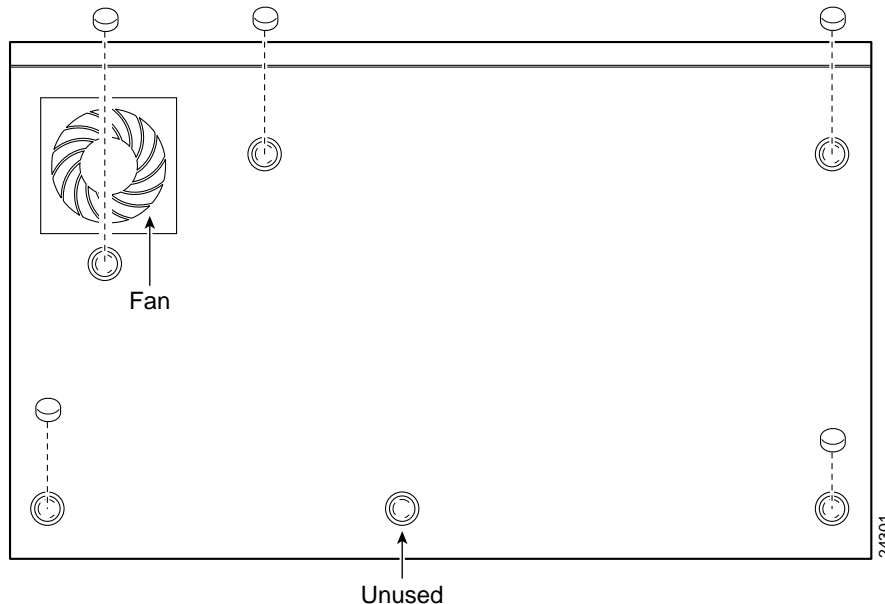
Installing a PIX 515/515E

This section contains the following topics:

- PIX 515/515E Surface Mounting
- PIX 515/515E Rack Mounting
- PIX 515/515E Vertical Mounting
- PIX 515/515E Installation

PIX 515/515E Surface Mounting

If you do not want to rack mount the unit, attach the rubber feet to the bottom of the unit as shown in Figure 4-5.

Figure 4-5   Attaching the Rubber Feet to the PIX 515/515E

PIX 515/515E Rack Mounting

Observe the following before installing the PIX 515/515E into an equipment rack:

*   To install optional circuit boards or memory, install the brackets on the unit for rack mounting, but do not put the PIX 515/515E in the equipment rack before installing the new boards. The chassis cover of the PIX 515/515E must be removed to properly install or remove a circuit board. Refer to "Removing and Replacing a PIX 515/515E Chassis Cover" for information on how to remove and replace the chassis cover.

    –   If you need information on installing a circuit board, refer to "Installing a Circuit Board in a PIX 515/515E".

    –   If you need to install additional memory, refer to "Installing a Memory Upgrade".
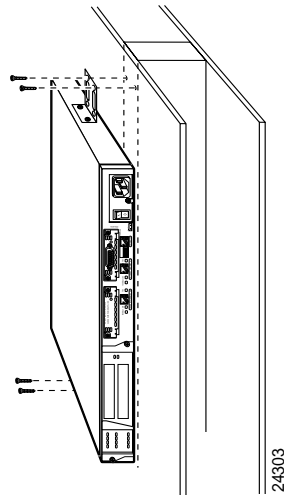
Complete these steps to install the PIX 515/515E in a rack:

Step 1   Attach the bracket to the unit using the supplied screws. You can attach the brackets to the holes near the front of the unit.

Step 2   Attach the unit to the equipment rack.

PIX 515/515E Vertical Mounting

To mount the PIX 515/515E vertically, attach the brackets to the side of the unit and mount the unit vertically as shown in Figure 4-6.

Figure 4-6   Installing the PIX 515/515E Vertically
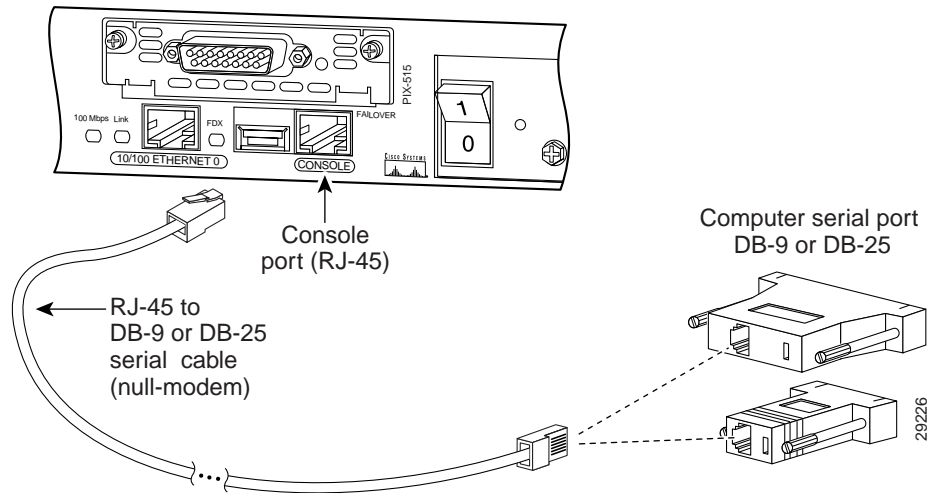

PIX 515/515E Installation

Complete these steps to install a PIX 515/515E:

Step 1   Connect the cable as shown in Figure 4-7 so that you have either a DB-9 or DB-25 connector on one end as required by the serial port for your computer, and the other end is the RJ-45 connector.
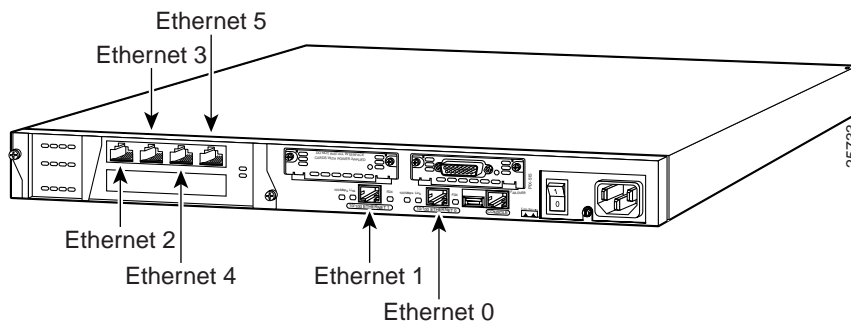
✎

Note   Use the Console port to connect to a computer to enter configuration commands. Locate the serial cable from the accessory kit. The serial cable assembly consists of a null modem cable with RJ-45 connectors, and one DB-9 connector and a DB-25 connector.

Step 2   Connect the RJ-45 connector to the PIX 515/515E Console port and connect the other end to the serial port connector on your computer.

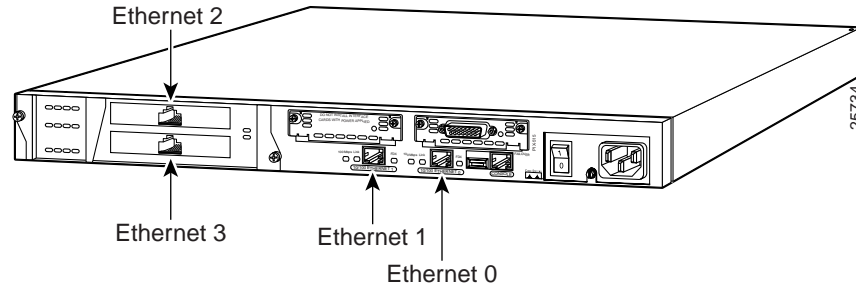*Figure 4-7   PIX 515/515E Serial Console Cable*

Note   If your unit has a four-port Ethernet circuit board already installed, refer to
Figure 4-8. (The four-port Ethernet circuit board requires the PIX-515/515E-UR
license to be accessed.) If it has one or two single-port Ethernet circuit boards,
refer to Figure 4-9. If you need to install an optional circuit board, refer to
"Removing and Replacing a PIX 515/515E Chassis Cover" for information about
how to remove and replace the chassis cover install circuit boards.

Figure 4-8   Four-Port Ethernet Connectors in a PIX 515/515E

Step 3   Connect the inside, outside, or perimeter network cables to the interface ports. Starting from the top left
the connectors are Ethernet 2, Ethernet 3, Ethernet 4, and Ethernet 5. The maximum number of allowed
interfaces is 6.

Note   Do not add a single-port circuit board in the extra slot below the four-port circuit
board.

Figure 4-9   Two Single-Port Ethernet Connectors in a PIX 515/515E

> **Note**   As shown in Figure 4-9, if your unit has one or two single-port Ethernet circuit boards installed in the auxiliary assembly on the left of the unit at the rear, the circuit boards are numbered top to bottom so that the top circuit board is Ethernet 2 and the bottom circuit board is Ethernet 3. (Additional Ethernet circuit boards require the PIX-515/PIX 515E-UR license to be accessed.)

If you have a second PIX Firewall to use as a failover unit, install the failover feature and cable as described in "Installing Failover".

> **Note**   Do not power on the failover units until the active unit has been configured.

Step 4   Power on the unit from the switch at the rear to start the PIX 515/515E.

PIX 515/515E Feature Licenses

If you have a PIX-515/515E-UR unrestricted feature license, the following options are available:

- If you have a second PIX 515/515E to use as a failover unit, install the failover feature and cable as described in "Installing Failover".

- If needed, install the PIX Firewall Syslog Server as described in the **logging** command page in the *Cisco PIX Firewall Command Reference, Version 6.1*.

- Refer to "Removing and Replacing a PIX 515/515E Chassis Cover", for information about how to remove and replace the chassis cover if you need to install optional circuit boards.

> **Note**   It is very important to remove the chassis cover before installing circuit boards in the PIX 515/515E. Even though it may appear possible to add or remove circuit boards from the back panel, removing the chassis cover greatly simplifies the process.

- If you need to install additional memory, refer to, "Installing a Memory Upgrade".

Installing Failover

Complete these steps to set up a failover connection:

⚠️

Caution   Before starting the installation, make sure that the power is off on both the primary and secondary units. Do not turn the power on until the units are connected and the primary unit has been completely configured. Power the primary unit on first, *then* power on the secondary unit.

Step 1   Locate the failover cable (shown in Figure 4-10). This cable is shipped separately from the PIX Firewall unit. The cable is labeled Primary on one end and Secondary on the other.
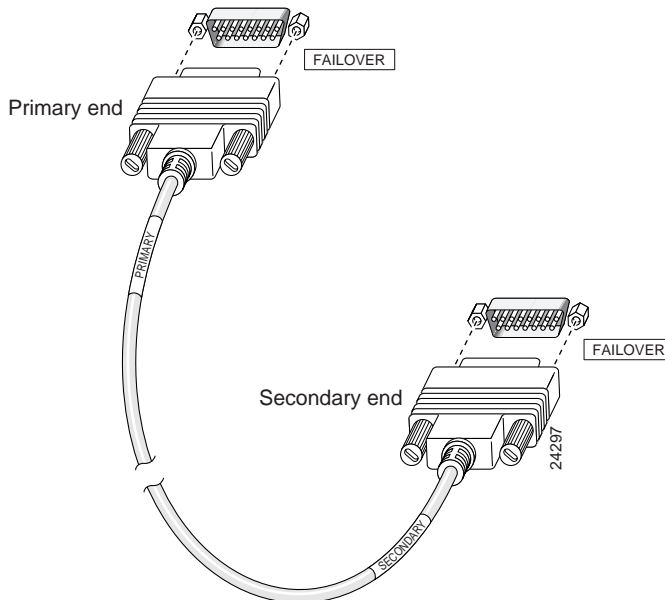
Install the cable for the PIX 515/515E as shown in Figure 4-10.

✎

Note   You can connect a PIX 515 unit to a PIX 515 unit but you cannot connect a PIX 515 unit to a PIX 515E unit or vice versa. Both units must be identical.

Figure 4-10   PIX 515/515E Failover Cable Connection

Step 2   Connect the Primary end of the failover cable to the first PIX Firewall unit, that is, the one you have already configured.

Step 3   Connect the Secondary end of the failover cable to the standby unit.

Step 4   Connect a power cord to the power connector on the rear panel of each unit, and the other end of each power cord to (preferably separate) power outlets.
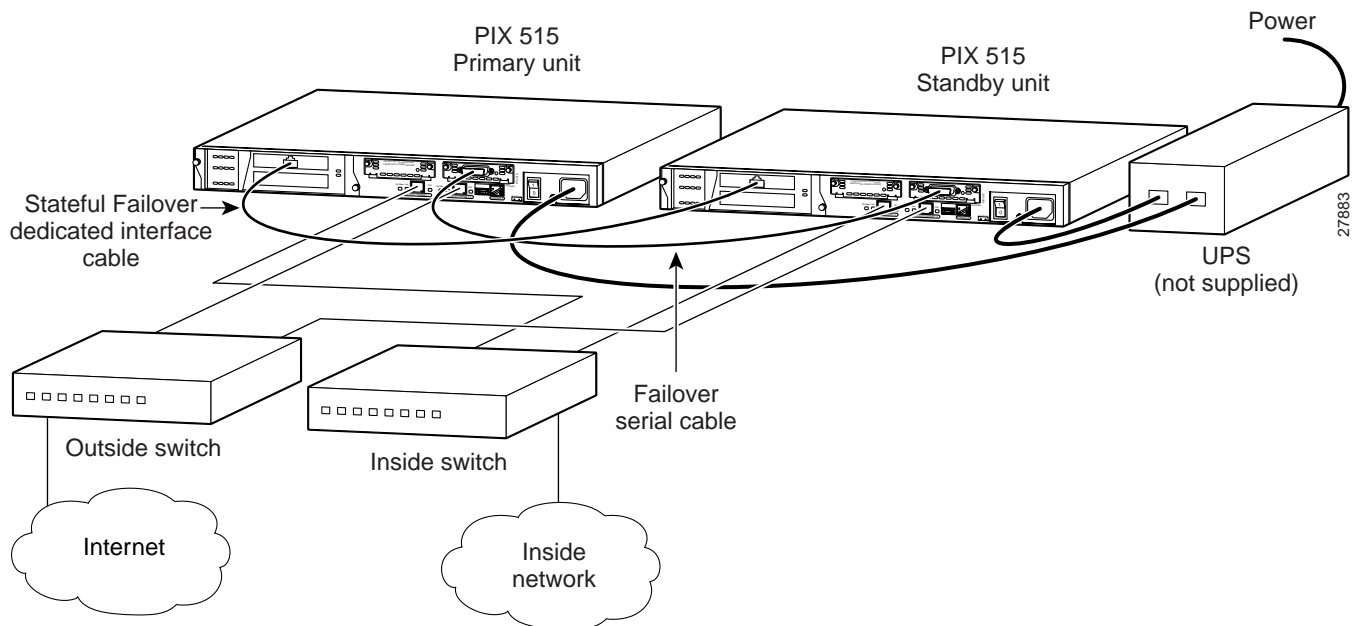
Step 5   If you are using Stateful Failover, use one of the following types of connections, that is appropriate for your system, between the dedicated interfaces on the PIX Firewall units:

- Cat 5 crossover cable directly connecting the primary unit to the secondary unit.
- 100BaseTX half-duplex hub using straight Cat 5 cables.
- 100BaseTX full duplex on a dedicated switch or dedicated VLAN of a switch.

Figure 4-11 shows an example of a minimally configured PIX 515/515E with only the two interfaces on the motherboard used for network traffic.

Figure 4-11   Failover Connections

> **Note**   All enabled interfaces must be connected between the active and standby units. Only configure the active unit. On a PIX 515/515E, the active unit is indicated by the ACT LED on the front of the unit.

Step 6   Use the power switch at the back of the units to power the primary unit on and then power the standby unit on.

Within a few seconds, the active unit automatically downloads its configuration to the standby unit.

If the primary unit fails, the secondary unit automatically becomes active.

Removing and Replacing a PIX 515/515E Chassis Cover

This section describes how to remove and replace the chassis cover from a PIX 515/515E. This section includes the following topics:

- Removing the Chassis Cover
- Replacing the Chassis Cover

Removing the Chassis Cover

Complete these steps to remove the chassis cover:

✎
Note Removing the PIX Firewall case does not affect your Cisco warranty. Upgrading the PIX Firewall does not require any special tools and does not create any radio frequency leaks.

Step 1 Read the *Regulatory Compliance and Safety Information for the Cisco PIX Firewall* document.

Step 2 Unplug the power cord from the power outlet. Ensure that the PIX 515/515E is powered off. Once the upgrade is complete, you can safely reconnect the power cord.
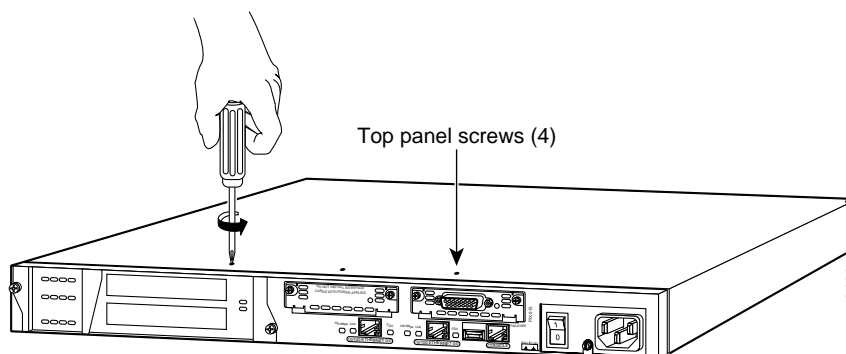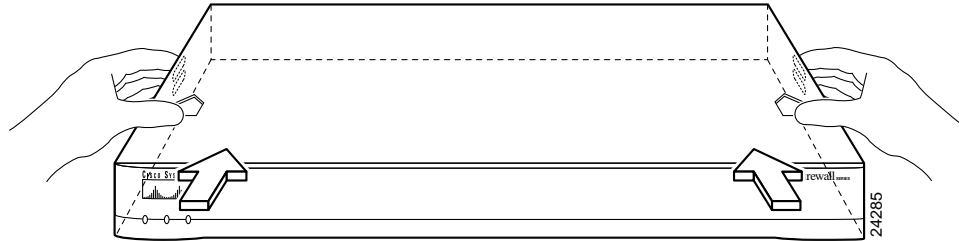
⚠
Warning **Before working on a system that has an On/Off switch, turn OFF the power and unplug the power cord.**

Step 3 Remove the screws from the front of the chassis on the PIX 515/515E (Figure 4-12).
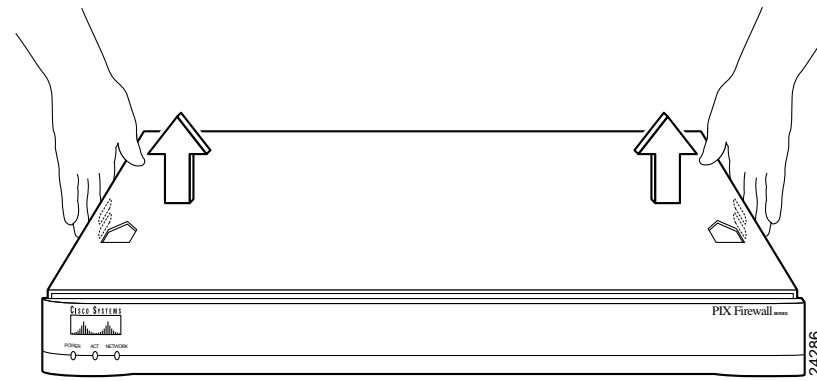
Figure 4-12   Removing PIX 515/515E Top Panel Screws

Step 4 With the front of the unit facing you, push the top panel back by about one inch as shown in Figure 4-13.

Figure 4-13 Pushing Back the Top Panel

Step 5   Pull the top panel up as shown in Figure 4-14. Put the top panel in a safe place.

Figure 4-14 Pull the Top Panel up to Remove

Replacing the Chassis Cover

⚠️

Caution   Do not operate PIX Firewall units without the top panel installed. The top panel protects the internal components, prevents electrical shorts, and provides proper air-flow for cooling the electronic components.

Complete these steps to replace the chassis cover:

Step 1   Place the chassis on a secure surface with the front panel facing you.

Step 2   Hold the top panel so the tabs at the rear of the top panel are aligned with the chassis bottom.

Step 3   Lower the front of the top panel onto the chassis, making sure that the top panel side tabs fit under the chassis side panels.

Step 4   Slide the top panel toward the front, making sure that the top panel tabs fit under the chassis back panel, and the back panel tabs fit under the top panel.

Step 5   Fasten the top panel with the screws you set aside earlier.

Step 6   Reinstall the chassis on a rack, wall, desktop, or table.

Step 7   Reinstall network interface cables.

Replacing a Lithium Battery

The PIX Firewall has a lithium battery on its main circuit board. This battery has an operating life of about 10 years. When the battery loses its charge, the PIX Firewall cannot function. Contact Cisco TAC to replace the battery.

Note   Do not attempt to replace this battery yourself.

Warning   **Danger of explosion exists if the lithium battery is incorrectly replaced. Replace only with the same or equivalent type recommended by the manufacturer. Dispose of used batteries according to the manufacturer's instructions.**

Installing a Memory Upgrade

Observe the following warnings, cautions, and notes when installing additional PIX Firewall system memory.

The following statement applies to DC models:

Warning   **Before performing any of the following procedures, ensure that power is removed from the DC circuit. To ensure that all power is OFF, locate the circuit breaker on the panel board that services the DC circuit, switch the circuit breaker to the OFF position, and tape the switch handle of the circuit breaker in the OFF position.**

The following statement applies to both AC and DC models:

Warning   **Before working on a system that has an On/Off switch, turn OFF the power and unplug the power cord.**

Caution   Always remove old memory before installing new memory.

Note   After installing additional memory in a PIX 515/515E, do not remove the memory strips and power on the unit, or the PIX Firewall unit becomes inoperable.
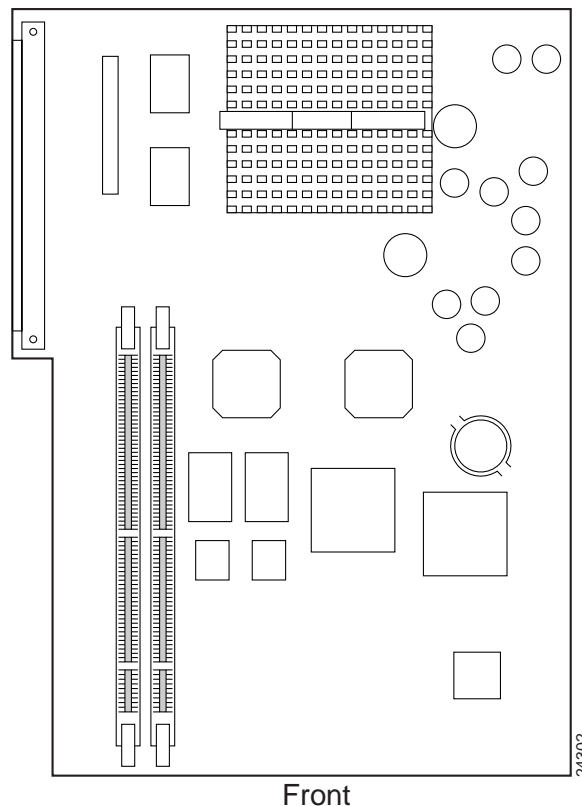
⚠️

Caution   If you remove a PIX Firewall chassis top panel, always reinstall the top panel. Running a
PIX Firewall without the top panel may cause overheating and damage to electrical
components.

Memory Installation Steps

Complete these steps to install additional system memory:

Step 1   Remove network wires and any cords connecting to the PIX Firewall unit if the unit is rack-mounted.
The PIX 515/515E should be removed from the rack and placed on a stable working surface. Ensure
that the unit is unplugged from its power source.

Step 2   Unpack the items in the memory upgrade kit.

Remove the top panel from the PIX Firewall unit. Remove all screws holding the assembly in place.
Refer to "Removing and Replacing a PIX 515/515E Chassis Cover" for information on how to remove
and replace the top panel.

Step 3   Determine the location of your system memory sockets (See Figure 4-15).

Step 4   Use the markings on the motherboard to determine the socket numbers. Always install the first memory
board into the lowest socket number. Progressively add memory boards into higher numbered sockets.

Figure 4-15 PIX 515 System Memory Location
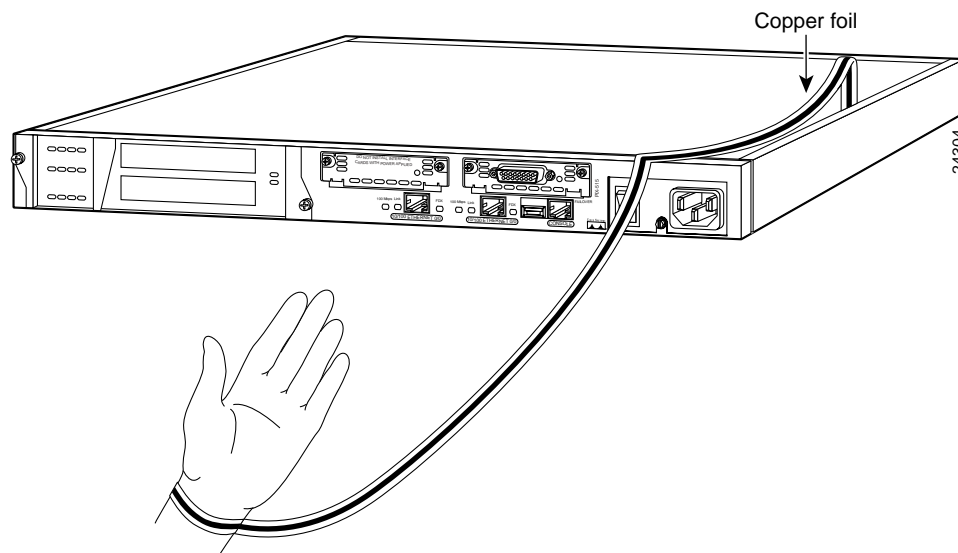

Front

24302

> ✎
> **Note**   Do not install a 64 MB DIMM in a PIX 515. You will not be able to properly replace the top panel because of the height of a 64 MB DIMM. Operating a PIX Firewall chassis without a top panel installed may cause damage to the unit.

The standard memory configuration for a PIX 515 is a 32 MB DIMM memory strip installed into one of two slots. If you are upgrading a 32 MB system, add a second 32 MB DIMM memory strip into the empty slot.

Step 5   Locate the wrist grounding strap in the accessory kit and connect one end to the unit as shown in Figure 4-16, or to the PIX Firewall chassis, and securely attach the other to your wrist so it contacts your bare skin.

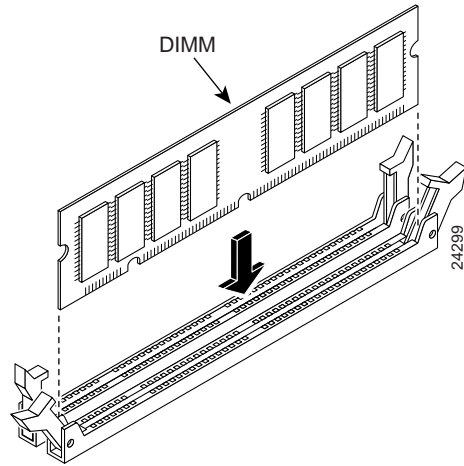*Figure 4-16   Attaching the Wrist Strap to a PIX 515/515E*

Step 6   With the wrist strap on your wrist, carefully grasp the memory strip from either end. Note that a DIMM strip has notches.

Step 7   To install a DIMM strip:

– Remove the old memory strip by opening the two plastic wing connectors, and pulling the old strip up. Discard the old strip.

– The standard memory configuration for a PIX 515 is a 32 MB DIMM memory strip installed into one of two slots. If you are upgrading a 32 MB system, add a second 32 MB DIMM memory strip into the empty slot. Refer to Figure 4-15, Figure 4-17, and Figure 4-18 for more information.
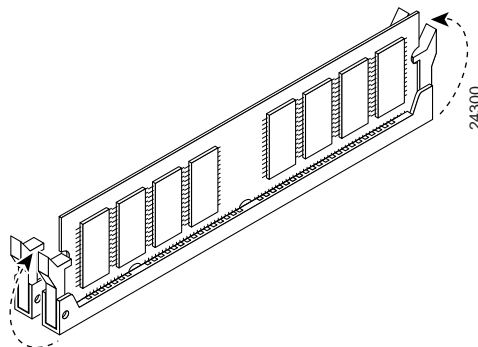
> ✎
> **Note**   You cannot install a 64 MB DIMM in a PIX 515 due to height restraints. You will not be able to properly replace the top panel if you use a 64 MB DIMM. Operating a PIX Firewall chassis without a top panel may cause damage to the unit.

Figure 4-17   Inserting a DIMM Memory Strip in a PIX 515/515E

Figure 4-18   Securing a DIMM Memory Strip in a PIX 515/515E

When you finish inserting new RAM memory, replace the top panel on the PIX Firewall chassis. Reattach the screws. If desired, rack mount the PIX Firewall and attach all cables and cords as discussed in previous sections. After the PIX Firewall is installed, you can view the amount of RAM memory in the system startup messages or with the **show version** command.
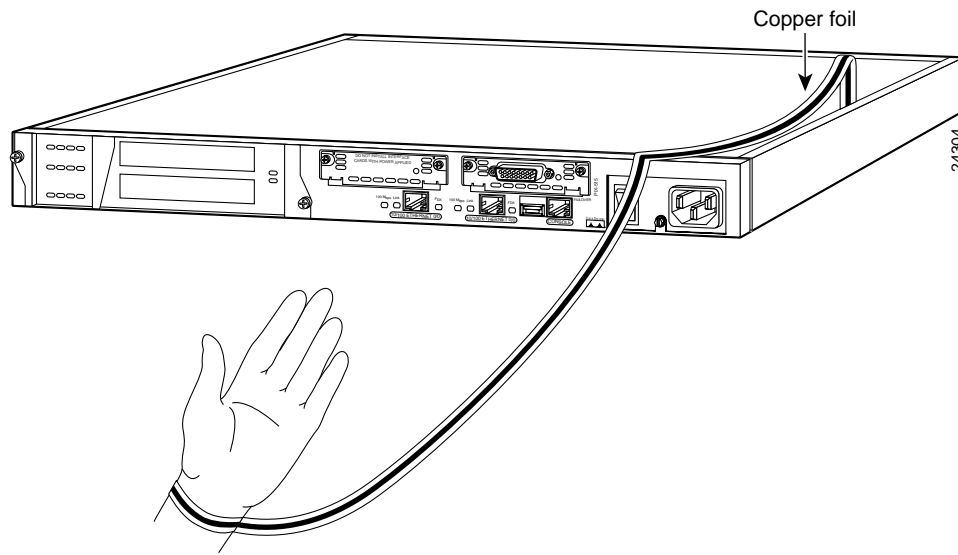
Installing a Circuit Board in a PIX 515/515E

The information in this section refers to both the AC and DC models of the PIX 515/515E.

Complete these steps to install a circuit board in a PIX 515/515E:

Step 1   Locate the grounding strap from the accessory kit. Fasten the grounding strap to your wrist so that it contacts your bare skin. Attach the other end to bare metal inside the PIX 515/515E chassis as shown in Figure 4-19.
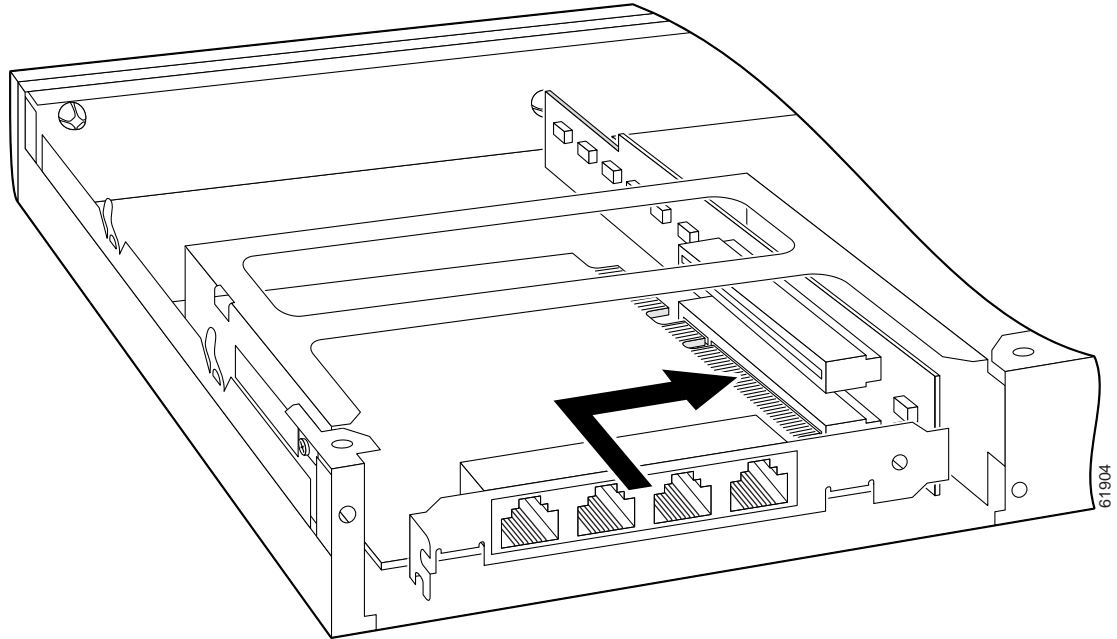
Figure 4-19   Attaching the PIX 515/515E Grounding Strap

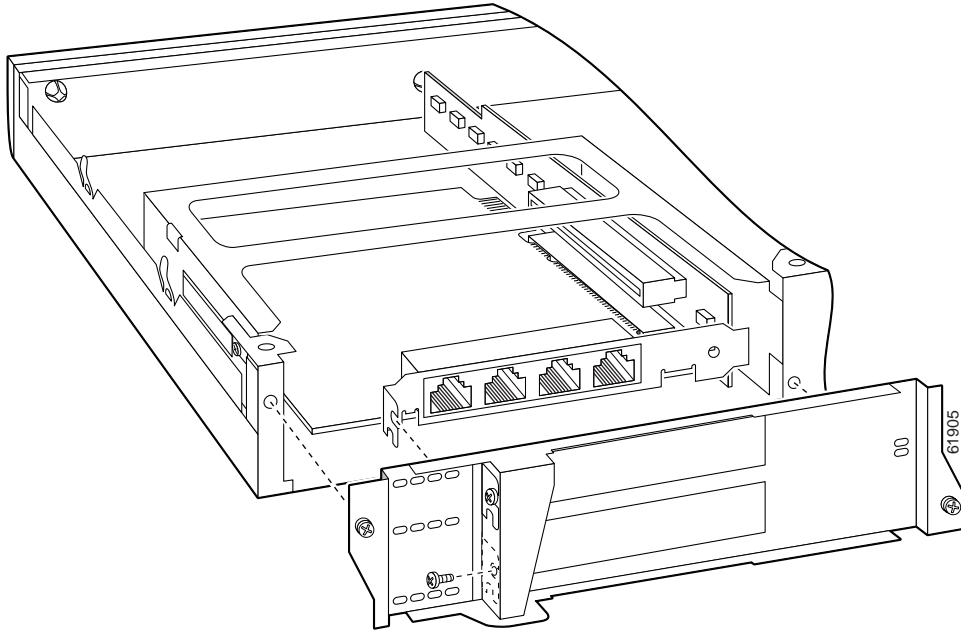**Step 2**   Remove the screws from the rear assembly on the left and put the assembly aside.

Step 3   Insert a circuit board through the cage opening and into the slot as shown in Figure 4-20.

Figure 4-20   Inserting a Circuit Board into a PIX 515/515E

✎

Note   When you insert a four-port Ethernet circuit board in the slot, the end of the circuit board's connector extends past the end of the slot. This does not affect the use or operation of the circuit board.

Step 4   Attach the back cover plate making sure that the connecting flange on the circuit board goes through the slot on the back cover plate as shown in Figure 4-21.

Figure 4-21   Attaching PIX 515/515E Back Cover Plate

Step 5   Attach the screw to hold the circuit board's connecting flange to the cover plate, and install the screws to attach the cover plate to the PIX 515/515E unit.

Step 6   Reattach the top panel.

PIX Firewall VPN Accelerator Circuit Board

The VPN Accelerator (PIX-VPN-ACCEL) is an encryption and compression accelerator circuit board. The VPN Accelerator uses a PCI interface and therefore can only be installed in PIX Firewall platforms with PCI slots. The VPN Accelerator begins to function immediately after installation without the need of special installation configurations.

Note   The new VPN Accelerator cannot be used with the former PIX Firewall IPSec accelerator in the same chassis. The PIX Firewall IPSec accelerator was also known as the Private Link card.
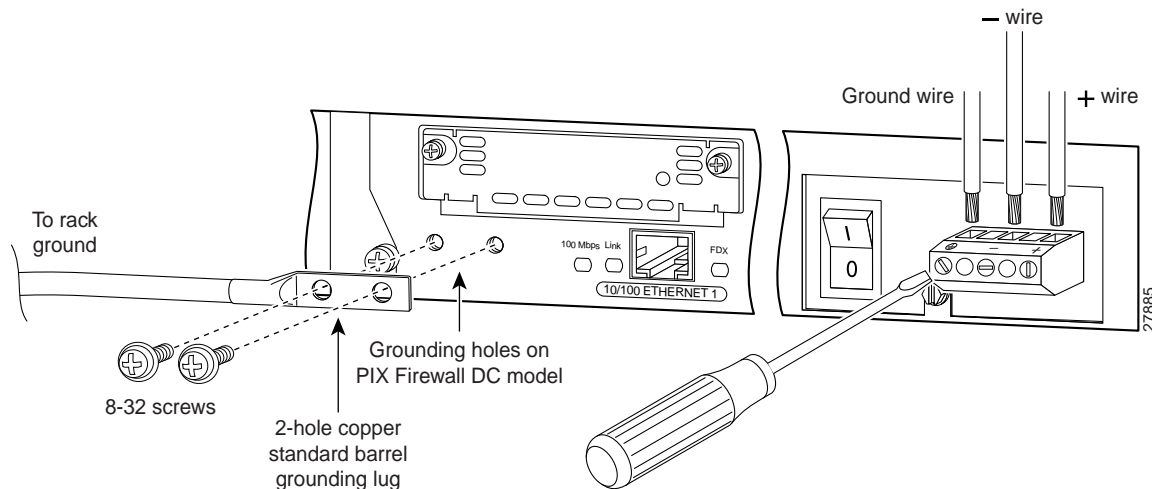
Installing a PIX 515/515E DC Model

⚠

Warning   **Before performing any of the following procedures, ensure that power is removed from the DC circuit. To ensure that all power is OFF, locate the circuit breaker on the panel board that services the DC circuit, switch the circuit breaker to the OFF position, and tape the switch handle of the circuit breaker in the OFF position.**

Complete these steps to install the PIX 515/515E DC power model:

Step 1   Read the *Regulatory Compliance and Safety Information for the Cisco PIX Firewall* document.

Step 2   Terminate the DC input wiring on a DC source capable of supplying at least 15 amps. A 15-amp circuit breaker is required at the 48 VDC facility power source. An easily accessible disconnect device should be incorporated into the facility wiring.

Step 3   Power off the PIX 515/515E by checking the power switch at the rear of the unit.

Step 4   As shown in Figure 4-22, the PIX 515/515E is equipped with two grounding holes at the back of the unit, which you can use to connect a two-hole grounding lug to the PIX 515/515E. Use 8-32 screws to connect a copper standard barrel grounding lug to the holes. The PIX 515/515E requires a lug where the distance between the center of each hole is 0.56 inches. A lug is not supplied with the PIX 515/515E.

Figure 4-22   Attaching a Grounding Lug to the PIX Firewall

Step 5   Power off the unit. Ensure that power is removed from the DC circuit. To ensure that all power is OFF, locate the circuit breaker on the panel board that services the DC circuit, switch the circuit breaker to the OFF position, and tape the switch handle of the circuit breaker in the OFF position.

Step 6   Strip the ends of the wires for insertion into the power connect lugs on the PIX 515/515E.

Step 7   Insert the ground wire into the connector for the earth ground and tighten the screw on the connector. Refer to Figure 4-22 and using the same method as for the ground wire, connect the negative wire and then the positive wire.

Step 8   After wiring the DC power supply, remove the tape from the circuit breaker switch handle and reinstate power by moving the handle of the circuit breaker to the ON position.

Step 9   Install any remaining interface boards as described in "Installing a Circuit Board in a PIX 515/515E".

Step 10   Power on the unit from the switch at the rear of the unit.

Note   If you need to power cycle the DC PIX 515/515E, wait at least 5 seconds between powering off the unit and powering it back on.